PATENT
Attorney Docket No. 9960.0003-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	)	
	)	
J. Clark & C. Denning	)	Group Art Unit: 1632
	)	
Application No.: 09/593,316	)	Examiner: Quan J. Li, Ph.D.
	)	
Filed: June 13, 2000	)	Confirmation No.: 5627
	)	
For: ANIMAL TISSUE FOR XENOTRANSPLANTATION	)	

Mail Stop Appeal Brief--Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REPLY BRIEF

In response to the Examiner's Answer dated July 12, 2006, Appellants submit the following remarks. This Reply Brief is due September 12, 2006, and is timely filed.

1. The Examiner has not applied the correct legal standard for enablement

In the Examiner's Answer, the Examiner bases her conclusion of non-enablement on the inefficiency of somatic cell cloning by nuclear transfer. For example, the Examiner contends: "somatic cell cloning in farm animals was and still is highly inefficient, and the underlying mechanism for such inefficiency had not been fully understood, which reflects the under-developed state of the art, and such inefficiency cannot be resolved by routine experimentation." (Examiner's Answer at 11.) In other words, the Examiner equates inefficiency with non-enablement. The Federal Circuit has rejected such a rationale. The fact that nuclear transfer is inefficient is not a sufficient basis for rejecting Appellants' claims for lacking enablement.

In *In re Wands*, the Federal Circuit rejected the Board's conclusion that a low rate of demonstrated success showed that a person skilled in the art would have had to engage in undue experimentation in order to make antibodies that fall within the claims. 8 U.S.P.Q.2d 1400, 1405-6 (1988). The court found that the nature of monoclonal antibody technology involves screening hybridomas to determine which ones secrete antibody with desired characteristics and that practitioners of this art are prepared to screen negative hybridomas in order to find one that makes the desired antibody. (8 U.S.P.Q.2d at 1406.) The fact that the same technique had to be repeated many times to produce a positive result did not preclude enablement. The same is true with somatic cell cloning by nuclear transfer. The technique may need to be repeated many times to produce a positive result, but there is no evidence of record that a positive result will not be achieved if the technique is repeated sufficient times. In fact, the evidence of record shows that the skilled artisan would expect a positive result.

Appellants' specification describes the production of cells with a heterozygous inactivation of the α1,3GT gene. (Specification at Examples 4-5.) The Examiner conceded that

making such cells is enabled by Appellants' specification. (Examiner's Answer at 22: "making heterozygous ovine cells with one α1,3GT gene allele being inactivated has not been an issue under the enablement rejection.") Appellants teach using nuclear transfer to create fetal sheep with a heterozygous inactivation of the α1,3GT gene. (Specification at Example 6.) The Examiner recognized that there was no evidence that a sheep's viability would be compromised by a homozygous knockout of the α1,3GT gene. (Examiner's Answer at 31: "homozygous knockout of the α1,3GT [sic, gene] may not compromise the viability of the animal . . . .") Based on the successful creation of fetal sheep with a heterologous inactivation of the α1,3GT gene, the cloning of live sheep suitable for breeding would have required no more than routine screening. Once heterologous live sheep have been prepared, crossbreeding is all that is required to generate homozygous animals. The Examiner does not appear to contest this point, but bases the alleged lack of enablement on the lack of a ***live*** heterozygous animal. (Examiner's Answer at 11: "the α1,3GT+/- lamb, the starting material for crossbreeding, is missing, one cannot mate a heterologous fetus to obtain a fetus devoid of Gal α(1,3)Gal determinants.")

Thus, an issue raised by this Appeal is whether Appellants' teachings, together with Appellants' generation of fetal sheep with a heterozygous inactivation of the α1,3GT gene, are sufficient to enable ***live*** sheep with a heterozygous inactivation of the α1,3GT gene. The Examiner believes that fetal sheep are insufficient, and that a live-born sheep is required. The evidence of record does not support the Examiner's position.

Although some attempts at making live sheep by somatic cell nuclear transfer may not be completely successful, the evidence of record supports that the process will work when repeated sufficient times. As stated in the Declaration of Dr. Ian Wilmut, "[t]here is no reason why genetically modified animals cannot be made according to the method that Keith Campbell

described in our patent disclosures." (Declaration at 3.) Although the frequency of successful cloning can be affected by modifications, the basic procedure is effective. (*Id.*: "It is only the frequency that is affected, not the ultimate efficacy.") Moreover, Phelps et al. and Sendai et al. provide evidence that there is no block to prevent the successful creation of live animals with a heterozygous inactivation of the α1,3GT gene from fetuses.

The Examiner's position that progress in cloning technology was required to produce animals with an inactivation of the α1,3GT gene (Examiner's Answer at 26 and 30) is in error. The fact that there may be ways to improve the efficiency of the cloning process does not negate the fact that the basic process works. The Examiner has pointed to no evidence that standard cloning procedures as taught in Appellants' specification would not work to create such an animal. The fact that additional attempts may be necessary to produce a live sheep does not preclude enablement because such attempts would involve simply repeating the same procedure additional times. *See Wands*, 8 U.S.P.Q.2d at 1406.

Appellants' specification teaches working examples of fetal sheep with a heterozygous inactivation of the α1,3GT gene. The evidence of record shows that one skilled in the art would have expected that live-born sheep with a heterozygous inactivation of the α1,3GT gene could be generated if Appellants' cloning procedure was repeated sufficient times. The Examiner has provided no evidence to doubt this conclusion. All of the evidence cited by the Examiner merely supports the concept that cloning by nuclear transfer is inefficient, and that there are ways to increase that efficiency. The inefficiency of Appellants' cloning method is similar to the inefficiency of the method of making antibodies in *Wands*. 8 U.S.P.Q.2d at 1406. Just as the method in *Wands* was found to be enabled, Appellants' cloning method is likewise enabled. For

these reasons, the rejection of claims 1-6, 13-16, and 33-37 under 35 U.S.C. § 112, first paragraph, for lacking enablement should be reversed.

2. <u>The Examiner has not applied the correct legal standard for utility</u>

The Examiner has conflated the enablement requirement of 35 U.S.C. § 112, first paragraph, with the utility requirement of 35 U.S.C. § 101. The Examiner's argument appears to be that, since the specification does not provide a ***live*** heterozygous lamb, the invention of claims 5 and 6 cannot have a utility. (Examiner's Answer at 6: "the instantly claimed ovine animal or cells homologous for α1,3GT inactivation were not materialized at the time of filing, not well established in the art, and could not have rendered a significant and presently available benefit to the public, and thus do not impart a substantial utility.") Such an argument has no legal basis.

Although the utility requirement of 35 U.S.C. § 101 may overlap with the enablement requirement of 35 U.S.C. § 112, first paragraph, this overlap is limited to whether the specification teaches "how to use" the claimed invention, and not whether the specification teaches "how to make" the claimed invention. *See* M.P.E.P. § 2107.01(IV). Thus, the Examiner's reliance on an alleged lack of enablement of "how to make" the invention to reject claims 5 and 6 for lacking utility under 35 U.S.C. § 101 is in error. *See id.* The rejection of claims 5 and 6 under 35 U.S.C. § 101 should be reversed.

Please grant any extensions of time required to enter this Reply Brief and charge any additional required fees to our deposit account 06-0916.

FINNEGAN, HENDERSON, FARABOW,
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Dated: September 11, 2006

By: _____

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